



Laser Operator position is available in the Laser Sources Division of ELI ALPS

ELI ALPS (<https://www.eli-alps.hu/>), part of the Extreme Light Infrastructure (ELI), is a world-leading research facility in Szeged, Hungary, dedicated to studying ultrashort high energy processes. As one of the three pillars of this European megaproject, ELI ALPS provides cutting-edge ultrashort light sources, including attosecond XUV and X-ray pulses, for the scientific community, enabling groundbreaking research in light-matter interactions, valence and core electron science, materials science, 4D imaging, and various biomedical applications.

Description of the Laser Sources Division at ELI ALPS

Our Mission:

Here at ELI ALPS (<https://www.eli-alps.hu/>) we offer beamtime for external research applications which require state-of-the-art femtosecond pulsed laser systems, which can drive experiments themselves or through a secondary source, generate attosecond light pulses or different types of particle sources. Our main goal is to provide the shortest possible light pulses at the highest available average power for the scientific community.

The Laser Sources Division is responsible for the operation of all laser systems in order to drive the secondary source beamlines, endstations and provide individual user experiments with the requested beam parameters, including pulse energy, beam size, polarization state, pulse duration, CEP etc. specified for a given research project.

Other scientific activities within the Laser Sources Division include:

- Research towards further pulse shortening via post-compression techniques at all available wavelengths at ELI ALPS,
- Laser pulse metrology developments at high repetition rates and average powers, and
- Advancement in new sources (UV, VIS, far IR) with few-cycle durations and CEP stability.

Technologies:

- High average power and high repetition rate (100 kHz) ultrafast fibre laser systems: HR1 (100 W average power few-cycle laser), HR2 (400 W average power few-cycle laser) and HR Alignment. These unique few-cycle laser systems deliver few mJ, CEP stabilized, near-infrared pulses for gas harmonic attosecond beamlines and time-resolved spectroscopy experiments.
- Mid-infrared and high repetition rate ultrafast OPCPA systems: MIR (100 kHz) and MIR-HE (1 kHz, in development). Wavelengths around 3 μm sub-two-cycle pulse duration with exceptional CEP stability and control for various experimental applications.



- High peak power, near-single cycle 1 kHz OPCPA systems: SYLOS 2, SYLOS 3 and SYLOS Experiment Alignment 1 and 2. CEP-stabilized, near-infrared pulses with excellent overall stability features. The most versatile systems for gas and surface harmonic attosecond beamlines and electron and proton acceleration.
- High repetition rate PW laser: Ti:sapphire-based HF PW laser (under development in Szeged). The only 2 PW peak power system at 10 Hz repetition rate, which delivers 34 J with 17 fs for surface harmonics attosecond beamlines and particle acceleration.

Video: <https://www.youtube.com/watch?v=xsqDTmf-CCc>

What you will do:

The duties and responsibilities in the position include but are not limited to the following:

- Participate in the daily operation (start-up and shutdown procedures, maintaining the daily requested parameters by the users) and regular maintenance (chiller water and parts replacements, optics cleaning, etc.) of the ELI ALPS laser systems.
- Support laser scientists in the characterization of laser pulses at experimental stations and in laser troubleshooting.
- Supervise the operation of lasers during internal and external user experiments. Apply minor parameter changes on demand and recognize laser failure in time.
- Collect product/spare part/consumable specifications for small procurements.
- Convey tasks internally from research scientists to engineers and workshops.
- Get involved and assist in the scientific experimental works in the laser source and target area laboratories during user-related experimental activities.

What we expect:

Minimum education and experience:

Engineering, teaching or physical science related qualifications and good oral and writing skills both in English and Hungarian are considered as assets. Applicants with demonstrated hands-on technical skills, practical problem-solving approach and strong motivation will be considered as preferred candidates for the position, even without strong qualifications related to laser and optical scientific fields or with limited English knowledge.

Required skills and abilities:

- The successful candidates must be able to work as part of a scientific support team and have the ability to handle tasks independently in the laboratory.
- Good written and oral communication skills both in English and in Hungarian.



- Being eager to acquire new knowledge.
- Physical ability to work in cleanroom garment, plastic gloves and in laser safety goggles, lift and carry max. 5–10 kg electronic equipment or water bottles.
- Must be meticulous and responsible when handling delicate, sensitive, and high-value optical components, ensuring their safe and proper use at all times.
- Basic computer and MS Office skills.

Additional good to have skills and qualifications:

- Basic understanding of physics, optics, electronics,
- Good practical problem-solving skills,
- Programming skills (Python, Matlab, etc.)

What we offer:

- Challenging tasks and room for career advancement while working with cutting-edge technology in an international scientific environment,
- Competitive benefit package in regional comparison,
- Flexible working hours.

Job location: Hungary, Szeged

Start time: As soon as reasonable

Why join us?

- **International collaborations:** Our team frequently engages in international scientific collaborations with both experimental and theoretical areas, offering excellent opportunities to expand your global network and engage in pioneering research with experts in the field.
- **Cutting-edge facility:** ELI ALPS is part of the Extreme Light Infrastructure (ELI) project, providing access to some of the most advanced research tools in the world. ELI ALPS provides cutting-edge ultrashort light sources, including attosecond XUV and X-ray pulses, for the scientific community.
- **Quality of life:** We offer competitive salaries in regional comparison, and the city of Szeged provides pleasant living conditions.

Please upload your CV and motivation letter to our Career Site: <https://www.eli-alps.hu/en/Career-1>

Extreme Light Infrastructure ERIC / ALPS Facility / ELI-Beamlines

The Extreme Light Infrastructure (ELI ERIC) is the world's largest high-power laser research facility, offering cutting-edge lasers for groundbreaking science and innovation. Operating across two sites – ELI Beamlines in the Czech Republic (near Prague) and ELI ALPS in Hungary (Szeged) – it employs a diverse team of experts from around the globe.



ELI Beamlines operates four advanced femtosecond laser systems, delivering unmatched intensities. These lasers drive unique X-ray and particle sources for groundbreaking research in physics, chemistry, materials, life sciences, and astrophysics.

ELI ALPS operates lasers and secondary sources to deliver ultrafast light pulses (including attosecond pulses) for pioneering research in physics, chemistry, materials and life sciences. Its advanced systems enable exploration of ultrafast electron dynamics and complex molecular processes.